

This invention relates to pre-baked pastry crusts. Thus it is concerned primarily with the quick and easy preparation of desserts, such as cream pies, fruit pies, tarts, lemon meringue pies, frozen desserts, etc., in which a crust forms an integral part of the dessert. Recently there has been wide consumer interest in pre-baked crust for use in forming pies with a gel or pudding-type filling which can be poured into a pre-baked pie shell. These pies do not then require additional baking. The demand for these pre-baked crusts has been spurred on by the growing number of puddings and pie fillings (fully prepared, instant, frozen, etc.,) currently available to the consumer.

The production and sale of pre-formed, pre-baked pie shells or pie shell sections has not proven to be a commercially profitable undertaking since more than one-half of the pre-formed shells or sections are normally broken before they reach the consumer. Additionally, these pre-formed shells limit the housewife to making a pie in the size of the pre-form. This invention provides a means for enabling the housewife to prepare a crust structure of any desired shape or size. This crust may then be filled with a gel or pudding-type filling and served as a dessert without the necessity of further baking. It is estimated that the average housewife making use of this invention can prepare a pie-type dessert in about 15 minutes. This represents a savings of upwards to 45 minutes over the customary method of preparing and rolling dough and then baking the dough to form a pastry crust.

A method that is currently available to the housewife for quickly producing crusts is the use of cracker crumbs (e.g. graham cracker crumbs); however, this produces a cracker crumb crust structure which is markedly different from a true pastry crust in appearance, color, taste and mouth-feel.



It is an object of this invention to permit the quick and easy preparation of pre-baked crusts having the appearance, taste and mouth-feel of true pastry crust.

It is another object of this invention to produce a mix which may be readily molded to form a pre-baked crust of any desired shape.

Yet another object of this invention is to permit the convenient preparation of pies having a gel or pudding-type filling.

10 Additional objects and advantages of the invention will be obvious from the description herein.

In general, this invention is directed to a mix consisting of pre-baked pastry crust crumbs, together with a fat and preferably an edible binder to form a mix which may be readily molded into a pre-baked crust. The crust produced under this invention possesses the texture, taste and mouth-feel of a crust made by a conventional baking process. It is also contemplated that a crust produced with the pre-baked crumbs of this invention could be baked for a short
20 time subsequent to the molding operation in order to obtain a harder crust.

The pre-baked crumbs of this invention are produced by forming a baked crust, by any household or commercial method, and then comminuting the crust into crumbs. The crumbs, which are baked in such a manner so as to obtain a golden brown color and a moisture content of between about 0.5% to 5%, are then spray coated with a liquid fat and gently mixed with a binder. The crumb mix so produced can be packaged and sold to the consumer with instructions to
30 mold the mix into a suitable container (e.g. pie plate).

Alternatively the baked crumbs may be packaged and the consumer instructed to combine the crumbs with a liquid fat (e.g. melted butter, salad oil, etc.), and to then mold

the resulting crumb mix into the container. Preferably, but not necessarily, the crumbs are also combined with an edible binder material (e.g. granulated sugar) which aids in the formation of a firm crust.

10 In accordance with the present invention a short dough composition is formulated to include about 45% to 70% flour, 0% to 4% salt, 20% to 50% shortening and 5% to 25% water. Short dough is the type of dough normally used for making crusts and it may also include various supplementary ingredients such as eggs, milk, etc. which have as their primary function the production of color in the baked crust.

The flour used in the dough composition can be any of the common cereal flours such as wheat, corn, rye and the like. The shortening used in this invention can be comprised of any of the animal or vegetable fats, hydrogenated vegetable oils, other edible fatty substances, or combinations of these which have heretofore been known to and employed by those skilled in the baking art.

20 The salt as well as other flavoring ingredients (e.g. spices) may be added to the short dough composition itself or alternatively these ingredients may be added instead to pre-baked crumbs together with the liquid fat material. The water used to prepare the dough is preferably iced water, or a blend of water and ice, and is added in an amount sufficient to permit the optimum, cohesive dough but insufficient to permit excessive melting or smearing of the shortening throughout the dough.

30 The pre-baked crumbs are produced by cutting the shortening into a flour-salt mixture and then briefly blending the mix to form a dough. If desired, the salt may instead be dissolved in the water which is to be added to the dough. The shortening is cut into the flour-salt mix in such a manner that the particles of shortening will not be

too thoroughly dispersed throughout the final moistened dough. The dough is then sprinkled with water and kneaded until the dough balls. Preferably the dough is refrigerated for a period of from about 20 to 30 minutes before it is rolled out to sheet form having a thickness of from about 1/16" to 1/4" and baked for 3 to 20 minutes at about 400°F. to 450°F. After removal from the oven the crust is cooled to about ambient conditions and then comminuted into crumbs by pressing through the openings of a sieve or by grinding in one of the commercially available mills. The baking can be done in any conventional baking oven. The exact baking conditions depend upon such variables as the particular dough composition, the exact thickness of the rolled dough and the color desired for the baked dough. However, one skilled in the art will readily be able to select the proper operating conditions.

The crumbs produced by this procedure preferably include a major portion of flake type crumbs together with a lesser amount of smaller granular shaped crumbs. The crumb consistency directly affects the mouth-feel and structural stability of the pre-baked pastry crust in that the flake type crumbs enable the crust of this invention to possess both the appearance and mouth-feel of a true pastry crust and the combination of flake and granular crumbs permit the formation of a crust which will not readily crumble and fall apart as does the well-known cracker crumb crust.

The crumbs produced in accordance with this invention possess the golden brown color of true pastry crumbs and are dehydrated to a reduced moisture content of between about 0.5% to 5% by weight and preferably of from 1% to 3%. At this low moisture content the crumbs are shelf stable over a relatively long period of time.

The pre-baked and dehydrated crumbs produced by this invention are adapted to be mixed with a fat and an

dibl binder material and molded into a desired crust structure . The crumbs may be combined with the fat (e.g. spray coating with a melted fat or blending with a powdered fat), mixed with the binder and packaged or alternatively the dehydrated crumbs may be immediately packaged and sold to the consumer together with instructions to add a liquid fat either with or without an additional binder material before molding. In either event, the crumb mix from which the crust is molded includes on a weight basis about 60% to 90% dehydrated pre-baked pastry crumbs, 7% to 25% fat and 0% to 20% binder material and preferably about 60% to 80% dehydrated pre-baked pastry crumbs, 7% to 25% fat and 8% to 20% binder material.

The liquid fat suitable for use can be any of the commercially available and acceptably stable animal fats or hydrogenated vegetable oils as well as salad oils and melted butter or margarine. The edible binder material may be any of the sugars (e.g. sucrose), hydrolyzed cereal solids (e.g. corn syrup solids), starches, cellulose, gums or combinations of any of these. When the binder material is to be packaged with the pre-baked and dehydrated crumbs we prefer to use corn syrup solids in which the percentage of reducing sugars, calculated as dextrose, is low. For example, a corn syrup solid having a low dextrose equivalent (D.E.) of 24 is highly desirable since such a material has low sweetness impact, is not hygroscopic and will not cake or become lumpy when packaged.

The crumb mix of this invention can be readily molded to form a crust covering the contour of any shape container such as a pie plate. A molding element such as a fork or a measuring cup is useful in molding and pressing the crumb mix to fit the container. If desired, the crust structure can be made harder by baking for about 3 minutes at 325°F. after the molding operation is complete . Preferred

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erably the crust should be refrigerated for a short period of time until it is ready for use.

Exempl I

Pie Dough Composition:

Flour (wheat)	70.0 grams
Salt	1.8 grams
Shortening (hydrogenated cottonseed oil)	39.0 grams
Water (iced)	17.0 ml.

10 The shortening is cut into the flour-salt mixture and mixed in with a standard household mixer operating at a low speed for 30 seconds. Water is sprinkled over the mix and blended with a fork until the dough balls. The dough is then refrigerated for 25 minutes. The dough is next rolled out to about 1/16" thickness, placed in an 8" pie tin, and baked for 15 minutes in a preheated 425° oven. The pie shell is cooled and pressed through the openings of a U.S. Standard sieve equipped with 1/4" square openings. The resultant crumbs possess a moisture content of about 3% by weight. The crumbs are then cooled to 40°F. and spray coated, using a hand sprayer, 20 with 13.0 grams of hydrogenated vegetable oil (coconut-palm oil mixture). The coated crumbs are then gently mixed with 20 grams of corn syrup solids (24 D.E.). This crumb mix is packaged in a metal foil laminate pouch and subsequently molded into an 8 inch pie tin.

Example II

Pie Dough Composition

30	Flour (wheat)	93.0 grams
	Salt	2.5 grams
	Shortening (hydrogenated cottonseed oil)	46.5 grams
	Water (iced)	21.0 ml.

A rolled dough about 1/16" thick is produced in accordance with the method set forth in Example I. The dough is then placed on a pre-heated steel band and passes through an oven having air recirculated at 400°F., for about 5 minutes to produce a crust having a golden brown color and a moisture content of about 2%. This crust is subsequently ground in a

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commercial comminuting mill and the dehydrated crumbs are then packaged in a metal foil laminate pouch. Subsequently the crumbs are removed from the pouch and mixed with 25 grams (2 tablespoons) of granulated sugar (sucrose) and 45 ml. (3 tablespoons) of melted butter. This crumb mix is then pressed into a 9 inch pie tin.

The crust produced by this invention looks and tastes like a true pastry crust which may be used in any number of homemade desserts.

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It will be apparent that there are variations and modifications of this invention and that the Examples, preferred proportions and ingredients, and typical operating procedures may be varied without departing from the spirit of the invention.

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The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A method for producing a pre-baked pastry crust consisting of the steps of:
 - (a) formulating a pastry dough;
 - (b) rolling the dough into sheet form;
 - (c) baking the dough to produce a dehydrated crust having a moisture content between 0.5% and 5%;
 - (d) comminuting the crust into crumbs;
 - (e) making a crumb mix free of moisture and consisting of 60% to 80% of the dehydrated crumbs, 7% to 25% fat and 0% to 20% of a binder material which is a sugar, a hydrolyzed cereal solid, a starch, a cellulose, an edible gum or a combination thereof;
 - (f) molding the crumb mix into a pastry crust structure.
2. A method according to claim 1, wherein the crumbs include a major portion of flake type crumbs.
3. A method according to claim 1, wherein the dehydrated crumbs are sprayed coated with a liquid fat and mixed with the binder material.
4. A method according to claim 3, wherein the binder material is corn syrup solids having a low dextrose equivalent.
5. A method according to claim 1, wherein the crumb mix includes as binder a granulated sugar binder and the fat is melted butter or melted margarine.
6. A method according to claim 1, wherein the pastry dough contains by weight 45% to 70% flour, 0 to 4% salt, 20 to 50% shortening and 5 to 25% water.



ABSTRACT OF THE DISCLOSURE

A mix including pre-baked pastry crust crumbs is produced by forming a pastry dough in the ordinary manner, heating the dough in an oven to produce a baked and dehydrated crust, comminuting the crust into crumbs and then mixing the crumbs with a liquid fat and an edible binder. Any size or shape pastry crust can be formed from the mix by simply molding the crumb mix into the desired size container (e.g. pie tin). The crust produced from these crumbs has the appearance and mouth-
10 feel of true pastry crusts.